



Ailanthus Control Methods

Removing Tree-of-Heaven

Forestry Topic 55

www.dof.virginia.gov

September 2021

What is Ailanthus?

Ailanthus altissima (also known as tree-of-heaven, paradise tree, Chinese sumac, stink tree or just Ailanthus) is a native of China. In North America, Ailanthus is a non-native invasive plant that is common in disturbed areas, along roadsides and forest edges. Seeds and seedlings are very tolerant of poor soils. They germinate and grow best in full sunlight. Seedlings quickly put down a large taproot and re-sprouting occurs when the main stem is cut, burned or otherwise damaged. Ailanthus can dominate an area due to vigorous re-sprouting, root-suckering, and secretion of a chemical from its root system to the surrounding soil that is toxic to some other plants. Once established, Ailanthus density expands mainly by root sprouting.



Ailanthus re-sprouting after stem was cut



Ailanthus altissima (tree-of-heaven)

Controlling Ailanthus

Long-term elimination of Ailanthus requires diligence; its seed production, germination rate and sprouting potential make repeated follow-up management and monitoring essential. New sprouts or seedlings should be treated as soon as possible after detection so they will not rebuild root and seed reserves. Establishing a healthy cover of native vegetation can help discourage re-establishment, but will not prevent it. The best strategy is to develop an integrated pest management (IPM) approach

that involves the coordinated use of several compatible control strategies.

Manual Methods

Ailanthus can be effectively removed by pulling up young seedlings as soon as they are large enough to grasp securely. Be sure this is done before they start to produce seeds or develop a tap root (which would make this physically difficult or impossible). It may be easier to attempt this after a rain when the soil is loose.

Chemical Methods

Herbicides are the most effective tool for controlling Ailanthus. They are the quickest way to kill the root system and prevent re-sprouting of cut trees. It is important to carefully read and follow all label instructions and warnings for any herbicide, and to use care when applying them near other plants.

Foliar Spray

Herbicide solutions can be applied to fully-expanded leaves of individual trees. Foliar sprays are recommended where Ailanthus size and distribution allow effective spray coverage of all foliage without unacceptable contact to nearby desirable vegetation. Herbicide active ingredients

Ailanthus Control Methods

that are effective when applied to the foliage of Ailanthus include: 2% glyphosate, 1.5% triclopyr ester, and 2% triclopyr amine. Apply late in the growing season when trees are moving carbohydrates to roots (summer to early fall).

Stem Injection (Hack-and-Squirt)

This technique is very effective when applied during the summer. It requires first making downward-angled cuts into the sapwood around the tree trunk at a comfortable height, using a hand ax. With spray bottle or wand, squirt the selected product into the cuts within a minute or two, so that the bottom of the cut is covered but liquid doesn't run out. This method can be used with trees of any size, though it is most effective with stems over two inches in diameter. A triclopyr product is most often recommended.



Ailanthus stem injection

Basal Spray

A basal bark application is one of the easiest and most effective methods of controlling Ailanthus. It does not require any cutting. A solution of a 20-25% concentration of oil-soluble triclopyr ester product in an oil-based carrier is highly effective. Using a handheld or backpack sprayer, apply the mixture in a continuous 12-inch wide band around the tree base. The basal bark method is generally used for trees that are less than six inches in diameter, though larger stems (up to 16 inches) may also be treated effectively.



Ailanthus basal spray

Biological

No biological control for Ailanthus is currently available. Ongoing research into potential options includes both a fungal pathogen (*Verticillium nonalfalfae*) and a plant-eating weevil (*Eucryptorrhynchus brandti*).

The fungal pathogen, which causes a vascular wilt disease, was found naturally killing Ailanthus in Pennsylvania, Virginia and Ohio. All research completed to date suggests that this pathogen could be used as a safe and effective biological control agent. Work towards registering this pathogen through the U.S. Environmental Protection Agency as a biopesticide is ongoing. If successful, it is possible that the product will be available to the public in several years.

The weevil, which is native to China and feeds on Ailanthus foliage and wood, has been studied in quarantine since 2004. The results of this research are currently being reviewed by the USDA Animal and Plant Health Inspection Service and their Technical Advisory Group for Biological Control Agents of Weeds to determine if this weevil should be permitted for release.

	Virginia Department of Forestry
	900 Natural Resources Drive, Suite 800 Charlottesville, Virginia 22903 Phone: (434) 977-6555
www.dof.virginia.gov	
VDOF FT0055; 09/2021	

This institution is an equal opportunity provider.